

### **REMARKS**

This responds to the Office Action mailed on March 14, 2008.

Claims 1 and 12 are amended, claims 9, 25 and 26 are canceled, and claims 29-31 are added; as a result, claims 1-8, 10-19 and 22-31 are now pending in this application.

#### **§103 Rejection of the Claims**

Claims 1-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication Number 2004/0157110 to Knights *et al.* (hereinafter “the Knights reference”) in combination with U.S. Patent No. 6,090,858 to El-Sayed (hereinafter “the El-Sayed reference”) in combination with U.S. Publication Number 2002/0149002 to Womelsdorf *et al.* (hereinafter “the Womelsdorf reference”), further in combination with U.S. Publication Number 2003/0222048 to Asakawa *et al.* (hereinafter “the Asakawa reference”).

Claims 22-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Knights reference in combination with the El-Sayed reference, the Womelsdorf reference, and the Asakawa reference, further in combination with U.S. Patent No. 6,326,058 to Biebuyck *et al.* (hereinafter “the Biebuyck reference”).

Applicants disagree with the foregoing stated grounds of rejection and desire to further clarify various distinctions of the present invention over the cited art. Reconsideration of the present application is therefore requested in light of the present amendment and following remarks.

In the following discussion, the disclosed embodiments may be discussed in comparison to the prior art. It is understood, however, that any discussion of the disclosed embodiments, as well as any discussion of the differences between the disclosed embodiments and the prior art do not define the scope or interpretation of any of the claims. Instead, such discussed differences, if presented, are offered merely to help the Examiner appreciate important claim distinctions as they are discussed.

The Examiner cites the Knights reference for disclosing the application of slurries or inks that contain particulates and dispersed solids. The Examiner admits, however, that

the Knights reference fails to disclose the particular-claimed nano-particle dispersion (Office Action at page 3). Applicants also submit that the Knights reference also fails to disclose or to fairly suggest a carrier that includes an organic liquid having a surface tension that is less than water that may be evaporated to deposit the claimed nano-particle dispersion. Although the Knights reference discloses a liquid carrier that suspends the particulates and dispersed solids that may be evaporated to deposit a layer of the particulates and dispersed solids, the Knights reference fails to disclose or to fairly suggest an organic liquid carrier.

The Examiner cites the El-Sayed reference for teaching the synthesis of colloidal metal nanoparticles in a soluble polymer. The Examiner admits that the El-Sayed reference does not disclose that a molecular weight of the soluble polymer is less than 25,000 AMU (Office Action, at page 4). Applicants again submit that the El-Sayed reference fails to disclose or fairly suggest an organic liquid carrier.

The Examiner also cites the Womelsdorf reference for disclosing an aqueous dispersion of zinc oxide nanoparticles including a stabilizer, such as a sodium polyacrylate having a disclosed mean molecular weight of 5100. The Examiner admits that the Womelsdorf reference fails to disclose forming various features on the substrate (Office Action at page 5). Applicants again submit that the Womelsdorf reference fails to disclose or suggest an organic liquid carrier.

Finally, the Examiner cites the Asakawa reference for disclosing coating a micro-structured object having features with dimensions that range between 50 nanometers and 200 microns. The Asakawa reference fails to disclose, or fairly suggest an organic liquid carrier.

Turning now briefly to the claims, differences between the claim language and the teachings in the applied combination of references will be specifically pointed out. Claim 1, as amended, recites in pertinent part: "A method for making an electrode by depositing nano-particles on an object having a microstructure, comprising... providing a carrier having between 99.45% and 80% of *an organic liquid having a surface tension that is less than water* ...mixing the charged soluble polymer, metal component and the

carrier...removing at least a portion of the carrier from the object..." (Emphasis added). As described in detail above, the asserted combination of references fail to teach, either singly or in any motivated combination, providing a carrier that includes an organic liquid having a surface tension that is less than water. Accordingly, claim 1 is allowable over the cited combination of references. Claims depending from claim 1 are also allowable, based upon the allowability of the base claim, and further based upon the additional limitations in the dependent claims.

With reference now to the Examiner's rejection of claims 22-28, Applicants have cancelled claims 25 and 26 without prejudice, so that the rejection of claims 25 and 26 in the present application is rendered moot.

The Examiner has additionally applied the Biebuyck reference in rejecting the claims 22-24 and 27-28. Applicants understand the Biebuyck reference to fairly teach configuring a surface on a patterning device (*e.g.*, a tool that employed in patterning a substrate) to be hydrophobic. It does not teach or fairly suggest providing a hydrophobic surface on a substrate having the disclosed micro features and microstructure.

Turning once again to the claims, specific differences between the claim language and the applied reference will be particularly pointed out. Claim 22 presently recites, in pertinent part: "A method, comprising...*providing a substrate that includes micro-features that extend into the substrate, wherein the substrate is hydrophobic in regions external to each of the micro-features...*" (Emphasis added). Applicants submit that the Knights, El-Sayed, Womelsdorf and Asakawa references fail to disclose or suggest, at least, a substrate having hydrophobic features in any respect. The Biebuyck reference also fails to disclose or fairly suggest a substrate having the claimed hydrophobic features. Instead, the Biebuyck reference teaches a hydrophobic surface applied to a tool that is used to pattern a substrate. Claim 22 is therefore allowable over the cited combination. Claims depending from the claim 22 are also allowable, based on the allowable form of the base claim, and further in view of the additional limitations recited in the dependent claims.

Claim 27 presently recites, in pertinent part, “A method, comprising...preparing a substrate to receive the nano-particle dispersion, *wherein the substrate includes a first portion altered to be non-wettable by the nano-particle dispersion, and a second portion that is wettable by the nano-particle dispersion.*” (Emphasis added). Applicants again submit that the Knights, El-Sayed, Womelsdorf and Asakawa references fail to disclose or suggest a substrate having hydrophobic features. The Biebuyck reference further fails to disclose or suggest a substrate having hydrophobic features. Claim 27 is therefore allowable over the cited combination. Claims depending from the claim 27 are also allowable, based on the allowable form of the base claim, and further in view of the additional limitations recited in the dependent claims.

New Claims

Claims 29-31 are new. No new matter has been introduced through the presentation of claims 29-31.

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at 206-219-0554 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: MS AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 16<sup>th</sup> day of June 2008.

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